TRIGONOMETRÍA

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Ecuaciones e inecuaciones trigonométricas

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ECUACIÓN TRIGONOMÉTRICA

tipos

ELEMENTAL

forma

$$\tan\left(x+\frac{\pi}{4}\right)=-1$$

$$\operatorname{sen}x=0$$

$$\cos 4x=\frac{\sqrt{3}}{2}$$

es posible calcular la incógnita (x)

NO ELEMENTAL

forma

$$\operatorname{sen}2x+\operatorname{sen}x+4\cos x=-2$$

$$\tan\left(\frac{\pi}{4}-x\right)+3\tan x=0$$

$$\operatorname{sen}x+\cos x=\sec x$$

se resuelve

transformando
a su forma elemental

mediante

las identidades trigonométricas

SOLUCIÓN GENERAL DE UNA ECUACIÓN TRIGONOMÉTRICA ELEMENTAL

$\text{sen}(\theta) = N$

$\theta = n\pi + (-1)^n \text{arcsen}(N)\ ;\ n \in \mathbb{Z}$

$\text{sen}x = \frac{\sqrt{3}}{2}$

$x = n\pi + (-1)^n \text{arcsen}\left(\frac{\sqrt{3}}{2}\right)$

$\therefore x = n\pi + (-1)^n \frac{\pi}{3}\ ;n \in \mathbb{Z}$

$\text{Cos}(\theta) = N$

$\theta = 2n\pi \pm \arccos(N)\ ;\ n \in \mathbb{Z}$

$\cos x = \frac{1}{2}$

$x = 2n\pi \pm \arccos\left(\frac{1}{2}\right)$

$\therefore x = 2n\pi \pm \frac{\pi}{3};\ n \in \mathbb{Z}$

$\tan(\theta) = N$

$\theta = n\pi + \arctan(N)\ ;\ n \in \mathbb{Z}$

$\tan 2x = -1$

$2x = n\pi + \arctan(-1)$

$2x = n\pi + \left(-\frac{\pi}{4}\right)$

$\therefore x = \frac{n\pi}{2} - \frac{\pi}{8}\ \ n \in \mathbb{Z}$

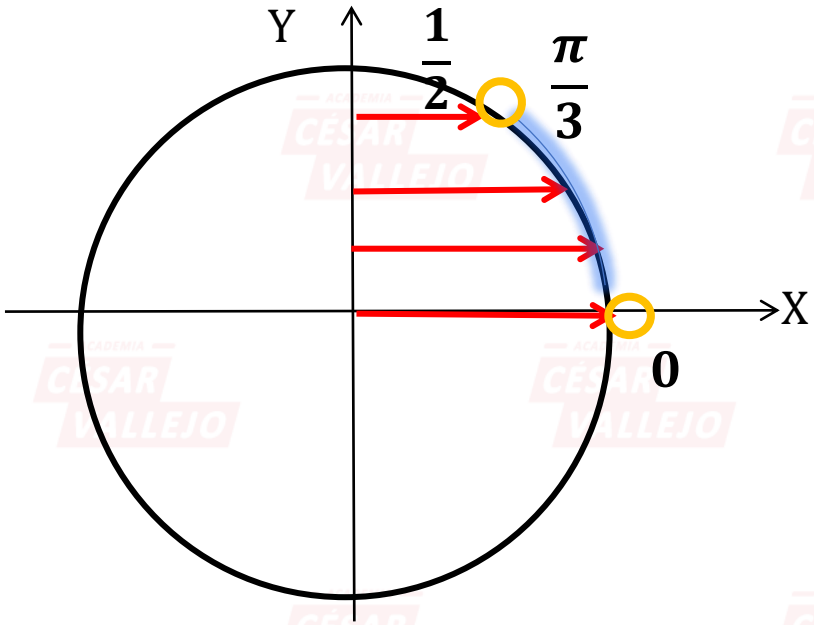
INECUACIÓN TRIGONOMÉTRICA

se resuelven

mediante la circunferencia trigonométrica

ejemplo

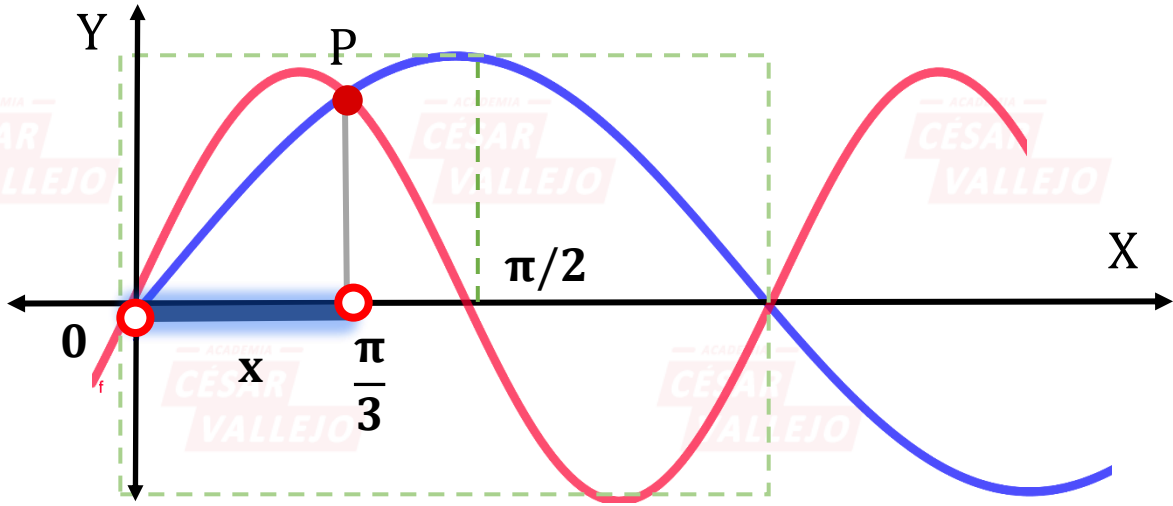
Resolver: $\cos x > \frac{1}{2}, \quad x \in \langle 0; \frac{\pi}{2} \rangle$



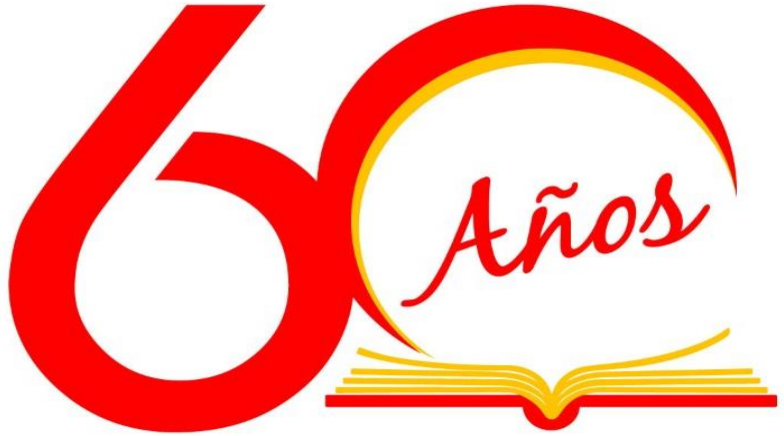
mediante la gráfica de las funciones trigonométricas

ejemplo

Resolver: $\text{sen}2x > \text{sen}x, \quad x \in \langle 0; \frac{\pi}{2} \rangle$



$C.S. = \langle 0 ; \frac{\pi}{3} \rangle$



¡Gracias!